

**Environmental Assessment OR-OR-030-02-29**  
**Mahogany Mountain N255**  
**Emergency Stabilization and Rehabilitation (ESR) Plan**

**I. PURPOSE AND NEED**

**FIRE BACKGROUND INFORMATION**

Fire Name	Mahogany Mountain
Fire Number	N255
District/Field Office	Vale District/Malheur Resource Area
Admin Number	OR-034
State	Oregon
County(s)	Malheur, OR
Ignition Date/Cause	July 14, 2002, Lightning
Date Controlled	July 21, 2002
Jurisdiction	Acres
<i>BLM</i>	7220
<i>Private</i>	1440
Total Acres	8660

The area burned by the Mahogany Mountain wild fire (Map 1) is in need of stabilization and rehabilitation to minimize soil movement, preserve on-site productivity, reduce the invasion and increased dominance of undesirable flammable annual plants and reduce the potential for increased dominance of existing noxious weed as well as the invasion of new species. These objectives can be met by protecting residual native vegetation communities during a period necessary for recovery of health and vigor and establishing desirable perennial plant cover to replace annual vegetation communities to the extent possible. This environmental assessment analyzes the benefits and risks of implementing rehabilitation actions to establish perennial vegetation cover. It also includes a limited rehabilitation and a no action alternative.

The purpose of the emergency fire stabilization and rehabilitation project (ESR) is to:

- reduce the risk of accelerated erosion
- restore the lost upland shrub component necessary for wildlife habitat
- restore the health and vigor of upland grass communities
- reduce the risk of future fires
- prevent the spread of invasive and noxious weeds
- protect burned area from grazing impacts

## ISSUES AND CONCERNS

- 1) Vegetation - Reestablishing perennial vegetation before invasive grass species such as cheatgrass and medusahead ryegrass invade and dominate newly disturbed range sites.
- 2) Livestock - Implementing adequate rest from livestock grazing to allow vegetation to adequately establish and recover to levels which may sustain livestock grazing and provide site stability.
- 3) Wildlife - Loss of prey species for raptors such as golden eagles, loss of food and cover for mule deer, bighorn sheep and pronghorn, loss of nesting habitat for loggerhead shrike, sage sparrow, Brewer's sparrow, sage thrasher, western meadowlark, lark sparrow, mourning dove, and chukar, loss of cover for great basin rattlesnake, striped whipsnake, racer, gopher snake, and Mojave collared lizard, whiptail, leopard lizard, side-blotched lizard, sagebrush lizard and fence swift and a loss of cover and feeding area for many migratory song birds.
- 4) T&E and Sensitive Species - Habitats for the sensitive species that may occur in this area could be compromised if invasive species dominate or if over-aggressive rehabilitation treatments are used.
- 5) Cultural Resources - Short and long term integrity of cultural sites and artifacts.
- 6) Watershed and Soils - The proper hydrologic function of upland watersheds to capture, store, and safely release rainfall and snowmelt and the ability of streams to meet State of Oregon water quality standards may be impaired, as a result of the wild fire.
- 7) Noxious Weeds and Invasive Species - Reestablishing perennial vegetation before noxious weeds such as Scotch thistle, Russian knapweed, jointed goatgrass, and whitetop and invasive grass species such as cheatgrass and medusahead ryegrass invade and dominate these newly disturbed range sites.

Emergency action is needed to stabilize burned rangelands and to comply with the Northern Malheur MFP and Oregon's Standards for Rangeland Health and Guidelines for Livestock Grazing Management.

## II. RELATIONSHIP TO PLANNING

The Northern Malheur Management Framework Plan (1983) and Proposed Southeastern Oregon Resource Management Plan (2001) were reviewed and it was determined that actions proposed in the Mahogany Mountain ESR Plan are consistent with the objectives, goals and intent of these Land Use Plans.

The following statements in the approved Northern Malheur Management Framework Plan (MFP) (1983) support the proposed rehabilitation treatments funded with Emergency Stabilization and Rehabilitation funds:

### Northern Malheur MFP

Maintain existing range improvements, RM 1.12

Rehabilitate all disturbed areas by seeding appropriate ground cover, L 7.4

Require rest for 2 growing seasons and reduce livestock if necessary to protect resource production and vigor of key species on all burned areas following wildfire, RM 2.6

Attain and/or maintain a vegetative composition of 55% grass, 25% forbs, and 20% shrubs, WL 11.4

Future seedings should include a variety of grass, forbs and shrubs, WL10.2

Additionally, implementation of rehabilitation treatments are consistent with the objectives and proposed management actions identified in the Proposed Southeastern Oregon Resource Management Plan and Final EIS

(2001) which will lead to a replacement land use plan for the Malheur and Jordan Resource Areas of the Vale District.

### III. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Table 1: Summarized treatments by alternative

Action	Proposed Action	No Action	Limited Rehabilitation
Drill seeding (acres)	800	0	0
Shrub Aerial Seeding (acres)	1200	0	1200
Fence Reconstruction (miles)	7	0	0
Temporary fencing (miles)	3	0	0
Weed treatment (acres treated)	500	0	0
(acres monitored)	7220		0

#### A. PROPOSED ACTION

##### 1. REVEGETATION

A combination of aerial and drill planting methods would be used. Sagebrush seed would be broadcast aerially by either helicopter or fixed wing aircraft on 1200 acres (Map 2). Drill seeding would be applied with rangelands drills pulled by tractors or dozers on 800 acres (Map 3). Approximately 50 of the 800 acres identified for drill seeding in the Willow Creek drainage may not be accessible to rangeland drills, seed would be broadcast and incorporated into the soil to provide better contact with soil and soil moisture with harrows with rubber-tired vehicles. Seed to be applied would be of species native to the ecosystems. Species may include basin and Wyoming big sagebrush, bitterbrush, fourwing saltbrush, bluebunch wheatgrass, basin wildrye, bottlebrush squirreltail, Thurber's needlegrass, western yarrow, Sandbergs bluegrass and globemallow. Seed mixes are described below:

##### DRILL SEEDING

<b>Seed Mixture 1</b>	
<b>Acres:</b>	800
<b>Timing:</b>	<b>Oct-Dec</b>
<b>Species (see above)</b>	<b>Rate (8 -10lb/ac)</b>

### **AERIAL SEEDING**

<b>Sagebrush</b>	
<b>Acres:</b>	1200
<b>Timing:</b>	<b>Oct-Mar</b> (seed on snow)
<b>Species</b>	<b>Rate (lb/ac bulk)</b>
Big Sagebrush WYOMING, BASIN	1.0

## **2. STRUCTURES**

### Temporary Fence

Approximately 3 miles of temporary electric fence would be constructed to protect the area to be rested from livestock for the term of the rehabilitation period (map4). Fence construction and removal would be contracted by BLM.

### Fence repair

Approximately 13 miles of BLM fence was burned by the wildfire. Approximately 6 miles of the fence was constructed with rock crib structures and will not need to be repaired. Seven miles of fence with wooden structures would need repair. All wooden structures (gates, corners, and H-braces) over run by wild fire would be replaced with rock crib structures (per BLM specifications). These structures would be constructed with 48" no-climb wire and filled with rocks. This work would be contracted by BLM.

## **3. LIVESTOCK MANAGEMENT**

Allotments would be rested for a minimum of 2 spring growing seasons. All burned areas within these allotments would be closed to livestock grazing for the term of the rest period. These allotments would be evaluated in the fall of 2004 to determine when grazing may resume. Resumption in grazing will be dependent on meeting resource objectives that are consistent with the Standards, Guidelines and Indicators of Rangeland Health.

<b>ALLOTMENT NAME</b>					
	<b>Rest</b>	<b>Drill Seeding</b>	<b>Aerial Seeding</b>	<b>Fence Repair</b>	<b>Temporary Fence</b>
<b><i>MRA</i></b>					
Three Fingers	Yes	No	No	Yes	Yes
Mahogany Mountain	Yes	Yes	Yes	Yes	Yes
McCain Springs	Yes	No	No	Yes	Yes

#### **4. NOXIOUS WEED CONTROL**

Noxious weed control would consist of surveying to detect presence and invasion of noxious weeds, to be followed with treatment, then monitoring and retreatment. Any visible sites of Scotch thistle, whitetop, diffuse knapweed and chicory would be mapped and treated during FY2003. If other noxious weed species are detected during the survey/monitoring process, they would also be treated. In FY2004, all sites would be monitored and retreated where necessary. Any new sites detected during the monitoring process would also be treated.

#### **5. DOZER LINE REHAB**

Approximately 4.8 miles of dozer line were constructed during the fire suppression effort. All but 2.3 miles were constructed on motorized vehicle routes. Dozer lines or shoulders were smoothed and waterbarred before equipment left the fire but were not seeded due to dry conditions. Seeding would occur simultaneously during the other rehabilitation seedings. Some of the cat lines located near the proposed drill seeded areas would be drill seeded at that time. Others, which are not located near any of the proposed drill seeding areas or are not accessible to range drills would be broadcast seeded with helicopter, truck or ATV-mounted seeder. Additional, water barring would occur as needed.

#### **6. MONITORING**

##### Rangeland Health Monitoring Objectives:

**Objective No. 1:** To prevent accelerated soil erosion, restore canopy cover and ground cover.

**Objective No. 2:** Establish seeded species at desired densities.

Monitoring would be conducted for at least three years following the fire to determine if objectives have been met. Sampling sites would be established at key areas in treated and untreated areas. Attributes to be sampled using approved BLM methodology may include, vegetative cover, productivity, vigor, composition, density and frequency. A monitoring plan would be developed to document the location, methodology and attributes to be sampled.

**Monitoring Methods:** Sampling sites would be established at existing key areas throughout the area, and at additional sites if needed.

**Livestock** – Periodic use supervision would be conducted in the areas being rested from livestock to assure compliance. Monitoring data as indicated above as well as professional judgment would be used to determine when the health and vigor of desired vegetation has recovered to levels adequate to allow livestock to graze the burned area. Considerations would include; climate, vigor, cover, composition, productivity, growth stage and phenology of key and/or seeded species.

Noxious Weeds - Refer to item 4, above.

#### **B. ALTERNATIVE 1 – LIMITED REHABILITATION**

Rehabilitation efforts would be limited to aerial seeding sagebrush and reconstructing existing fences only. Areas, which could benefit from drill or broadcast seeding would not be treated. The burned area would be rested from livestock grazing for a minimum of 2 growing seasons.

#### **C. ALTERNATIVE 2 - NO ACTION**

Allow the burn area to recover over time without any re-vegetation and without making livestock reductions. Furthermore, all existing structures such as fences would be rebuilt in accordance with existing range development cooperative agreements or permits. No further rehabilitation efforts would occur.

## D. ALTERNATIVE CONSIDERED BUT NOT ANALYZED IN DETAIL

An alternative to use only nonnative plant materials was considered in the entire ESR seeding. This alternative was considered but not developed due to conflicts with management objectives for the area.

## IV. AFFECTED ENVIRONMENT

### 1. Upland Vegetation

The Mahogany Mountain ESR area encompasses approximately 7220 acres of public land, and it contains three livestock grazing allotments. Elevations range from approximately 2500 feet along the western edge at Owyhee Reservoir to over 5,000 feet near Mahogany Mountain. The major land forms are rolling to steep foothills with some steep to very steep rocky drainages which emanate from the Mahogany Mountain and drain to the Owyhee Reservoir.

A variety of plant communities were burned, predominantly the Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*)/bluebunch wheatgrass (*Pseudoroegneria spicata*) habitat type in varying seral stages, including mid to late and at the potential natural community. Both gray and green rabbitbrush (*Chrysothamnus nauseosus* and *viscidiflorus*) as well as broom snakeweed (*Gutierrezia sarothrae*) are found scattered throughout the entire area. In the draws deeper soils support such species as basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) and basin wildrye (*Leymus cinereus*); several large basins supporting this type were consumed by the fire. Sandberg bluegrass (*Poa secunda*) occurs throughout the area, and minor inclusions of Indian ricegrass (*Oryzopsis hymenoides*), bottlebrush squirreltail (*Elymus elymoides*) and Thurber's needlegrass (*Stipa thurberiana*) also occur. Higher elevation north slopes within the burned area support Idaho fescue (*Festuca idahoensis*). Annual species such as cheatgrass (*Bromus tectorum*) and clasping peppergrass (*Lepidium perfoliatum*) are found throughout the area but predominately in the lower elevation portions of the burn. Forbs include Pursh's milkvetch (*Astragalus purshii*), arrowleaf balsamroot (*Balsamorhiza sagittata*), Western crepis (*Crepis occidentalis*), and showy penstemon (*Penstemon speciosus*). Some riparian areas along Willow Creek also were burned, and include willow species (*Salix* sp.) along with basin big sagebrush and giant wildrye. Microbiotic crusts sporadically exist, particularly at the lower elevations.

### 2. Special Status Plants

No identified sites of special status plants were burned in this fire. However, it is almost certain that sites of Owyhee clover (*Trifolium owyheense*) and sterile milkvetch (*Astragalus sterilis*) were consumed during the burning phase. No inventory work for special status plants has been conducted within the burned area, and these two species are found directly adjacent to the fire to the north and the west in habitat presumed to be similar to that burned. Owyhee clover is listed by the state of Oregon as Endangered, and sterile milkvetch is listed by the state as Threatened. While Ertter's groundsel (*Senecio ertterae*) and Packard's blazing star (*Mentzelia packardiae*), both listed by Oregon as Threatened, are also found adjacent to the fire, known habitat for these species was not within the perimeter of the area burned. In addition, it is unlikely, especially in a dry year, that the barren ash talus rubble on which these species are found would have sufficient biomass to carry a fire.

### 3. Wildlife and Special Status Animal Species

The burn area contains year-long and seasonal habitat for mule deer, bighorn sheep and pronghorn antelope. It also contains habitat for sage grouse, chukar, and California quail, a diversity of raptors, riparian and sagebrush songbirds, mammals, reptiles and amphibians.

The fire burned vegetation important as food or cover for wildlife and special status wild life species (bighorn sheep, sagegrouse). Animals displaced fro burned areas typically experience higher mortality

rates due to their forced use unfamiliar habitat. Bighorn sheep in this area are have been killed from blue-green algae poisoning at Owyhee Reservoir. The shift in habitat use caused by the fire may result in additional mortalities.

#### **4. Riparian, Aquatic Resources and Water Quality**

The riparian areas in Willow Creek and surrounding tributaries burned in this fire. These drainages contain riparian woody-dominated vegetation. There are also several seep/spring areas with riparian herbaceous and woody vegetation in the Gin Basin area. The fire burned many of the large woody species entirely or partially, but there is regrowth from the base approximately three weeks after the fire.

#### **5. Soils**

The soils found in the area of the Mahogany Mountain fire were surveyed and described in Oregon's Long Range Requirements for Water 1969, Appendix I-11, Owyhee Drainage Basin. Unit 60 and Unit 98 occur on 20 to 60 percent slopes. Unit S76 occur on 12 to 20 percent slopes. Unit 76 soils occur on 3 to 12 percent slopes, and Unit 99 is a miscellaneous land unit mostly composed of bare rock. Microbiotic crusts have not been inventoried, but are known to exist throughout the burned area.

Unit 98 is a miscellaneous land unit that makes up approximately 50% of the burned area. It consists of highly eroded and dissected raw old lacustrine sediments occurring as "badlands" often on slopes steeper than 60 percent. These soils are not suited for rangeland seeding as native vegetative cover is very sparse in this soil.

The area has Unit 60 soils that are moderately fine textured, well drained soils underlain by old lacustrine sediments. They occur on gently sloping to hilly uplands mainly in conjunction with Unit 98 soils. Native vegetation consists mostly of big sagebrush, rabbitbrush, bluebunch wheatgrass, and Sandberg bluegrass. This soil has a high potential for range seeding. This soil makes up approximately 20% of the burned area.

Unit S76 soils are shallow, well drained, extremely stony soils over basalt, rhyolite, or welded tuff. These soils occur on gently undulating to steep lava plateaus. Native vegetation consists mostly of low sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. Stones and slope limit the potential of this soil for rangeland seeding. This soil is found in the area called Gin Basin and makes up approximately 15% of the burned area.

Unit 99 is a miscellaneous land unit consisting of recent lava flows. These flows are generally on low slopes, but do have extremely irregular, rough surfaces. There do tend to be small pockets of soil development on which there is some vegetation. This land unit makes up the area called Blackrocks and is approximately 10% of the burned area.

Unit 76 soils are shallow, clayey, very stony, well drained soils over basalt, rhyolite, or welded tuff. These soils occur on gently undulating to rolling lava plateaus and some very steep faulted and dissected terrain. Native vegetation consists mostly of big sagebrush, low sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. Stones limit the potential of this soil for rangeland seeding. This soil makes up approximately 5% of the burned area.

#### **6. Cultural Resources and Paleontology**

##### **Prehistoric Lifeways**

The continued use of the northern Great Basin is can be divided into different chronological periods represented by a different occupational intensity. From 14,000-11,000 B.P. Clovis and Folsom projectile points and a blade and core technology characterizes big game hunters and represents the PaleoIndian period. From 11,000-8,000 B.P., represents the climax of cultural development with the lithic technology characterized by seven different projectile point styles. The diversity in projectile point styles suggests not

only an improvement in lithic technology but also experimentation with hafting methods. From 8,000-7,000 B.P., and the eruption of Mt. Mazama at 7070 B.P., there is a decrease in the use of rock shelters. People appear to be moving from lower elevation lake sites to higher elevation spring sites as the climate becomes hotter and drier. Projectile points are corner-notched and classified typologically as the Lake Mohave, Windust, Northern Side-notched, Humboldt Basal-notched, Elko Eared, Elko Corner-notched, and Pinto Willowleaf. The preferred lithic material for projectile points and lithic artifacts shifts from basalt to obsidian. From 5,000-3,000 B.P., climatic conditions shift to warm and moist conditions characteristic of the Medithermal period. The predominate projectile point style is a slender corner notched point with continued use of the previous styles. In the northern Great Basin, Catlow twine is now an important class of perishable artifact. From 3000 B.P. to 1000 A.D. occupation continues without much change in the northern Great Basin. The archaeological evidence suggests a rather stable cultural environment where changes reflect the relative intensity of certain activities. The final stage of northern Great Basin prehistory, beginning about 1000 A.D., was the occupation of this area by the Numic speaking Northern Paiute. Radiocarbon dates on charcoal samples from Leslie Gulch yielded dates of BC 780 to AD 40 and AD 110 to 410.

With climatic changes, came a shift in floral and faunal species and the appearance of species that characterize arid environments. Overall, the prehistory of the northern Great Basin shows long continuity and adaptive change to distinctive ecosystems with a changing climate. The persistence of lithic and textile traditions and subsistence patterns during these chronological periods supports the theory of cultural continuity throughout the northern Great Basin. Settlements of the Northern Paiute were of two types: village and camps. Winter villages of up to fifty huts have been reported, but generally the winter villages consisted of small, unstable groups of about three families located near a major lake or river. Seasonal camps were located wherever there was water and food. Living structures were typically a fence-like windbreak of sagebrush for a temporary or summer camp with a tree or brush sunshade or domed wickiup for both winter and summer use. The subsistence economy of the Northern Paiute was strongly oriented toward the utilization of more than 50 plant species because these provided a more abundant and dependable than fowl, fish or mammals. However, when mammals were available, almost all the parts were utilized. Mammals provided skins, furs, tools and many other by-products of aesthetic and practical value. Insects were often eaten, beetles, grasshoppers, locusts, crickets, ants and caterpillars were consumed, as well as most eggs and larva. These dietary items, which thoroughly disgusted Euro-American observed, were readily available, storable, high protein foods. In addition, historic documents indicated several hundred plants were used by the Indians of the Great Basin for medicinal purposes, fiber sources and food.

### **Historic Lifeways**

Exploration into this area began with the expeditions of John Jacob Aster, after he heard the stories from the Lewis and Clark Expedition of 1804-1806. Aster formed the Pacific Fur Company to capture the fur trade in the west. He sent a party by boat to build Fort Astoria and another party overland to explore the country, trap beaver and carry the furs to Astoria. The first written observations of southeastern Oregon can be found in journals kept by men involved in the expansion of fur trapping territory. In 1811, Wilson Price Hunt's party crossed the Snake River in the area of the Weiser River. Ramsey Crooks took nineteen men and followed the south bank of the Snake River, through Malheur County and past Farewell Bend, however, after entering Hell's Canyon in November, the weather turned bad and they were forced to turn around, and camp with Hunt at the mouth of the Weiser River. Eventually the Hunt and Crooks parties made their way to Fort Astoria. In 1812, Crooks and Robert Stuart were sent east, backtracking the route of their westward journey. They camped opposite the Weiser River on August 13, 1812. Journal excerpts show that they had crossed the Malheur and the Owyhee Rivers. Prior to 1858, military activity in eastern Oregon was limited to providing escorts for immigrant parties on the Oregon Trail, and to military exploration. In 1858, the Military department of Oregon was established under the command of General William S. Harney, thus assuring military aid and protection for Euro-American expansion into previously hostile country. In 1859, the military began their explorations in southeast Oregon. Their principal interests were additional supply and communication lines. In 1860, the Military Department of Oregon was merged with that of the Pacific and the regular force in the Northwest was reduced. Drafts were made on it to increase the army in the East, in preparation for the coming Civil War. During the 1860s, the majority of



Euro-Americans in southeastern Oregon were involved with horses, cattle, grain, and hay production, or road building, ferrying, freighting, or were associated with the military. Troops were responsible for protecting the settlers, miners and transportation routes between California and western Oregon to the Idaho mines. Euro-American settlements, like those of Native Americans can be found around water sources. The floodplain of the Owyhee River was prime farm land for hay, and fruit. The settlement of Watson was located approximately 4½ miles south of Leslie Gulch and 2 miles from the project area.

### **Paleontology**

While no extensive survey for paleontological resources has been undertaken in the project area, fossil flora and faunal resources are known to be present in areas adjacent to the Atkins Butte and Mud Duck fire areas. The Sucker Creek formation is one of the most famous and most extensive ash flows of the Miocene era. The ash and lava expelled during the middle Miocene occurred during one of the most explosive volcanic episodes which resulted in calderas up to 22 miles in diameter. The Sucker Creek formation yields preserved fossil plants such as oak, pine, willow and maple as well as vertebrate fossils of horse, rhinoceros, peccary, camel and oreodonts. Newly identified fossil localities have yielded fossil species of moles, shrews, bats, rabbits, and other rodents.

### **7. Visual Resources**

Public lands within the burned area are predominately in an area with a Visual Resource Management (VRM) class IV management objective, as identified in the Proposed Southeastern Oregon Resource Management Plan. The objective of VRM Class IV is to provide for management activities that may require major modification of the landscape. These management activities may dominate the view and become the focus of viewer attention. However, every effort should be made to minimize the impact of such projects by carefully locating activities, minimizing disturbance, and designing the projects to conform to the characteristic landscape. A small portion of the burn at two of the edges are within VRM class II.

### **8. Recreation**

The area is used by recreationists predominately for camping, hiking, and hunting. The area also provides opportunities for sightseeing, nature study, wildlife viewing, and horseback riding. Recreational use is widely dispersed and light.

### **9. Livestock Management**

Public land within three grazing allotments was burned by the fire. Allotments, active AUMs, total public acres within each allotment and public acres burned within each allotment are listed below:

<u>Allotment</u>	<u>Active AUMs</u>	<u>Total Public acres</u>	<u>Public Acres burned</u>
Thee Fingers	9,981	135,361	160
Mahogany Mountain	5,683	40,142	6990
McCain Springs	1,949	9,587	70

### **10. Noxious Weeds**

Scotch thistle (*Monopodium acanthus*), an invasive biennial, white top (*Cardaria sop.*), chicory and diffuse knapweed, invasive perennials, are present inside the burned area as well as outside. None of these species dominate the area. Cheatgrass, an invasive annual grass, is abundant within portions of the fire boundary.

### 11. Critical Elements Checklist

	Absent/ Unknown	Present, No Impact	Present, Discussed in EA
Air Quality Concerns		X	
Areas of Critical Environmental Concern	X		
Cultural Resources			X
Environmental Justice	X		
Floodplains	X		
Hazardous Substances or Solid Wastes	X		
Native American Cultural Concerns	X		
Noxious weeds, Invasive species			X
Prime or Unique Farm Lands	X		
Special Status Species			X
Visual Resources Management			X
Water Quality Concerns			X
Wetlands/Riparian Zones			X
Wild and Scenic Rivers (eligible)	X		
Wilderness Study Areas	X		
Wild Horse Herd Management Areas	X		
Energy and Mineral Resources	X		

## V. ENVIRONMENTAL CONSEQUENCES/IMPACTS

### 1. Upland Vegetation

The combination of livestock rest and reductions would allow existing perennial vegetation an opportunity to quickly recover without additional stress due to forage removal next spring. The minimum rest period of two spring growing seasons is BLM policy and in accordance with national fire rehabilitation guidance.

Typically, two growing seasons rest in areas where vegetative recovery is expected to be good is adequate. However, additional rest may be required if climatic conditions during the next few growing seasons are unfavorable for vegetative establishment. Drilling perennial bunchgrasses is expected to stabilize the disturbed sites quicker when compared to relying on natural re-vegetation methods. Drilling would also increase plant community structure and biological diversity, and decrease the likelihood for invasion of cheatgrass into these disturbed sites. Drilling would be expected to minimally disturb existing bunchgrasses and macrobiotic crusts.

Reductions in livestock numbers would decrease grazing impacts in both the burned and unburned areas.

Drill seeding would create some short term impacts to the remaining vegetation and to the soil surface. However, the long term benefits from reestablishing perennial vegetation would quickly out-weigh these short term disturbances. The disturbances caused by rangeland drill disk indentations vary, depending largely upon soil moisture and soil texture. Disturbance on moist soils is much less than on dry soils. The disks also dig deeper into coarser textured sandy soils, thereby creating more disturbance than would occur on finer textured loamy soils. These impacts can expose the roots of shallow rooted grass particularly Sandberg bluegrass, resulting in the loss of some of these individuals. In other cases, however, dense stands of Sandberg bluegrass can prevent the disks from penetrating into the soil. Again, this is also influenced by soil moisture and soil texture. It is anticipated that some (less than 10%) Sandberg bluegrass individuals could be lost to drilling. Deeper rooted perennials grasses such as bluebunch wheatgrass are less likely to be impacted by the disks.

## **2. Special Status Plants**

The actions under this alternative that may adversely impact habitats of special status plants would be drill seeding, fence construction, road repair, and dozer line rehab. Any occurrences of special status plants would be avoided during drill seeding to eliminate soil disturbance impacts. Most of the fire area has not been systematically inventoried and the potential for occurrences of these species is high. To avoid impacts from drill seeding on potential habitat, suspected habitat would be avoided. To ensure avoidance, the botanist would be on site during the drill seeding or would flag potential plant sites for avoidance. The other actions that may cause adverse impacts are subject to site-specific clearances. These projects can probably be modified to eliminate impacts, such as slightly re-routing fences, or moving proposed water bars. Actions that would benefit special status plants and habitats are rest from livestock, aerial seeding of sagebrush, establishment of native grass and shrub species and noxious weed control.

## **3. Wildlife/Special Status Species**

The key wildlife habitats that were affected by the fire are sagebrush steppe and riparian vegetation. Reseeding of sagebrush would help speed the recovery of that critical habitat element, especially because there are so few islands of unburned sage remaining within the burn for a seed source. All species that use the sagebrush steppe would benefit from seeding sagebrush. It will likely be many decades before wildlife populations approach pre-burn levels.

Seeding grass would improve habitat for wildlife compared to allowing cheatgrass or medusahead to dominate. Tall bunchgrasses would provide structure and cover for nesting birds and other wildlife, as well as provide competition to help reduce cheatgrass and potential invasions of medusahead wildrye.

## **4. Riparian/Aquatic Resources and Water Quality**

Short-term loss of vegetation cover may result in increased erosion and a temporary increase in sedimentation from high intensity summer storms; however, erosion from snowmelt and gentle rainfall would be limited. Recovery of the desirable vegetation community would improve infiltration rates, help extend stream channel baseflow, and provide for sediment control. These would be contingent upon the degree of damage and revegetation success. The proposed treatments to minimize post fire erosion by rangeland seeding and controlling noxious weeds and invasive species would benefit riparian areas, as well

as wildlife species dependent on those areas. The two years of livestock grazing rest on this pasture would allow the burned riparian species to recover sufficiently to withstand some light browsing as they become mature.

In the short-term after the fire, water quality would be somewhat degraded as runoff and erosion is increased and flow controls are lost due to the lack of vegetation. All actions that improve riparian resources contribute to improved water quality.

## **5. Soils**

Overall, the proposed action would be very positive on the health of these lands and with the success of the seedings surpass the prefire conditions for soil stability, hydrologic function, and nutrient cycling.

Under the proposed action 800 acres would be drill seeded using rangeland drills. These operations result in a short term impact to the soil resource in the form of mechanical disturbance while staging the operation and during the drilling process. The drilling process can disturb and loosen soil particles, increasing erosion potential in the short term. There can also be disturbance to biological soil crusts during drilling. As the existing vegetation starts regrowth and the seeded species began to establish the soil/watershed conditions would improve. Depending on the success of the seedings, the health of the watershed could improve to levels that exceed the prefire conditions.

The proposed action would reduce the potential of water or wind to increase erosion over the burnt area. Seeding of desirable perennial species, results in greater productivity and site stability. Where there is a reduction in single-species dominance, especially annual species, soil erosion rates would tend to decrease following recovery of perennial vegetation communities. Seeding following soil disturbing activities associated with wildfire, fire suppression, and emergency fire rehabilitation would limit the introduction and competition of weedy and undesirable species. Areas in poor condition prior to burning would stabilize more slowly, leaving soils vulnerable to erosive rainfall for longer periods.

There is also the potential for depletion of soil nutrients and negative effects to microbiotic crusts that might occur from increased erosion left unchecked. The proposed action would increase the potential for nutrient and microbiotic recovery under native vegetation conditions. Both resources are negatively impacted under weedy, nonnative annual vegetation.

The minimal two growing seasons of rest from livestock grazing would allow the vegetative community time to reestablish and the seeded species time for growth and establishment. Litter from these plants would also be produced to aid in soil protection and nutrient cycles. The mechanical disturbance to the soil surface from livestock hoof action would also be prevented during this period. This would aid in reducing the mechanical damage to the soil surface along with over utilization of key forage species in these areas.

Construction and repair of fences and other administrative structure would create a minimal localized disturbance to soils. Once these actions are completed their aid in managing livestock would have lasting positive results.

Other actions that would be taken as part of this proposal would have little impact to the soil/watershed resource.

## **6. Cultural Resources and Paleontology**

Previous surveys for Cultural resources include research along the Owyhee River, historical accounts by early settlers along the Owyhee River and research conducted for Bachelor and advanced degrees at Universities have all documented the presence of prehistoric and historic sites in the area. Sites include historic settlements, rock art, lithic scatter camp sites, and quarries for toolstone. Therefore, prior to ground disturbing activities, a Class III cultural resource inventory would be conducted.

Surveys of fossil flora and faunal resources would be conducted in conjunction with cultural resource surveys. Identified fossil localities would be flagged and excluded from the project area.

## 7. Visual Resources

This alternative would have a positive impact on visual resources over the long term. Anticipated improvements in vegetative cover and diversity would enhance scenic quality. Over the short term, there would be a slightly negative impact on visual resources due to the construction of temporary fences.

## 8. Recreation

There would be some positive impact to recreational values under this alternative. If the seedings are successful, improvements in scenic quality due to improved vegetative condition would positively affect recreationists' experiences. Improved habitat conditions for wildlife would lead to improved opportunities for nature study, wildlife viewing, hunting, and fishing. Over the short term, recreational travel would be made slightly more difficult due to the construction of temporary fences and the evidence of drill seeding. Management actions would occur within the VRM class IV area, and meet the VRM management objectives.

## 9. Livestock Management

Livestock would be excluded from the burned area for at least two growing seasons. Approximate AUMS not available annually are identified by allotment below:

Allotment	Public Acres burned	AUMs not available
Three Fingers	160	18
Mahogany Mountain	6990	1526
McCain Springs	70	16

Livestock permittees would be required to maintain the temporary fences when livestock are in areas adjacent to those fences increasing operational costs to those permittees. In the long term, positive benefits would accrue to livestock operators due to the establishment of perennial vegetation. An increased and more stable forage base would be established, allowing for increased livestock gains and more stable livestock operations over the long term.

## 10. Noxious Weeds

Establishment of perennial species would help prevent the spread and takeover of the site by noxious weeds, particularly medusahead wildrye, cheatgrass, Scotch thistle and diffuse knapweed. Establishment of a diverse shrub component would more fully occupy the soil profile with roots of desirable perennial species as compared to shallow rooted perennial grasses and forbs alone. Full occupation of the soil profile with roots of desirable species would provide additional competition to reduce dominance by deep rooted weedy species. Establishment of diverse perennial vegetation communities including grasses, forbs and shrubs would help prevent or minimize the proliferation and invasion of noxious weed species within the burned area and adjacent to roads impacted by suppression actions. A reduction in the occurrence of weeds adjacent to roads would limit transport of seed to new sites within the burn area and offsite.

## CUMULATIVE IMPACTS OF THE PROPOSED ACTION

Cumulative effects are the environmental impacts resulting from the incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, both Federal and non-

Federal. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.

The pre-fire condition of the burned area is a result of past wildfire, wildlife use, livestock use, and road construction. The proposed seeding would improve overall watershed condition by providing those species with root structure more capable of stabilizing soil. The seeding would also add to the vegetative species diversity and resultant wildlife species diversity. In addition, these species would aid in enhancing hydrologic function of the soil resources. Improved range condition, and therefore, hydrologic function, would result in less runoff, less sedimentation and a reduced risk of rill and gully formation from post-fire runoff producing events. Temporary loss of forage in the first year after the fire would be offset by improved species diversity and vigor provided by the seeded species.

## **B. ALTERNATIVE 1 – LIMITED REHABILITATION**

### **1. Upland Vegetation**

This alternative would allow sagebrush reestablishment from aerial seedings but would not necessarily facilitate the reestablishment of perennial grasses in the burned area. Resting from livestock grazing for two years would allow some recovery of the pre-existing perennial species. Because a portion of the pre-fire communities were dominated by invasive annual species, and even with the sagebrush seeding, a high potential for cheatgrass and medusahead wildrye invasion would exist. As discussed under the environmental consequences for the No Action alternative, portions of the area would still have a high risk of becoming dominated by an annual grass understory which would reburn in the near future. Many established sagebrush plants would have been killed by the fire and the area would begin to revert to an exotic annual grass monoculture.

### **2. Special Status Plant**

Aerial seeding of sagebrush would not cause ground disturbance and, therefore, special status plants would receive no direct adverse impacts. Special status plants and their habitats would be at a higher risk of invasion and potential displacement by annual species (e.g. cheatgrass and medusahead wildrye) than under the Proposed Action, if the pre-fire perennial plant communities do not out compete these annuals.

### **3. Wildlife/Special Status Species**

By seeding sagebrush, the area would more quickly return to a shrub cover that would provide habitat for sage-dependent species. By not drilling taller bunchgrasses, some areas would be left with only annual grasses. Only a few species would use them, such as horned larks, meadowlarks, long-billed curlews, and some small rodents such as deer mice.

### **4. Riparian/Aquatic Resources and Water Quality**

Effects to riparian areas under this alternative are similar to the proposal, but could be limited by the ability of the vegetation in the unseeded areas to recover. Not drilling seeding would leave a larger amount of sites vulnerable to cheatgrass/medusahead wildrye invasion. As with the No Action Alternative, widespread invasion by annual grasses may lead to rilling and gullying of the uplands that may eventually cause down gradient degradation of riparian.

Impacts to water quality could also be greater than with the proposal. A high risk of cheatgrass and/or medusahead invasion compromises the short and long term health of the watershed, and, hence, the ability of the watershed to provide good quality water.

### **5. Soils**

Overall, this alternative would be somewhat positive on the health of these lands, depending on the success of the existing vegetation to reestablish in a timely manner.

Impacts here would be similar to the proposed action except that there would be greater potential for annual species dominance within the burned area due to limiting the amount of reseeding native vegetation. Compared to the proposed action, this would result in higher levels of soil erosion, soil nutrient loss, and negative effects to and loss of microbiotic crust over the long term. In the short term there would be less soil surface disturbance due to few acres seeded using mechanical equipment on the ground.

The minimal two growing season of rest from livestock grazing would allow the vegetative community time to reestablish. Litter from these plants would also be produced to aid in soil protection and nutrient cycles. The mechanical disturbance to the soil surface from livestock hoof action would also be prevented during this period.

Construction and repair of fences would create a minimal localized disturbance to soils. Once these actions are completed their aid in managing livestock in the areas would have lasting positive results.

## **6. Cultural Resources and Paleontology**

A Class III cultural inventory would be conducted before ground disturbing activities commence for fence construction. Aerially seeding sagebrush would return some protective visual cover to the burned area in a few years, compared to the 20 + years that would be occur with natural regeneration.

Surveys of fossil flora and faunal resources would be conducted in conjunction with cultural resource surveys. Identified fossil localities would be flagged and excluded from the project area.

## **7. Visual Resources**

The vegetative appearance would be improved, but not as much as under the proposed action. Vegetative diversity would be less with only aerial sagebrush seeding. The increased presence of invasive weed species would provide a lesser degree of vegetative diversity and visual contrast over the short and long – term.

## **8. Recreation**

There would be some positive impact to recreational values under this alternative, but less positive impact than with the proposed action. If the seedings are successful, improvements in scenic quality due to improved vegetative condition would positively affect recreationists' experiences. Improved habitat conditions for wildlife would lead to improved opportunities for nature study, wildlife viewing, and hunting.

## **9. Livestock Management**

Livestock would be excluded from the burned area for at least two growing seasons. Approximate AUMS not available annually are identified by allotment below:

Allotment	Public Acres burned	AUMs not available
Three Fingers	160	18
Mahogany Mountain	6990	1776
McCain Springs	70	987

Not drill seeding perennial grasses in the burn would allow the burn to become dominated with cheatgrass and medusa head wildrye which would reduce the forage base for livestock. Although cheatgrass is palatable to livestock, it does not remain palatable for as long as perennial grasses do. Furthermore, it's forage production is highly variable and does not produce the dependable forage that the deep rooted perennial plants produce.

#### **10. Noxious Weeds**

Weeds left untreated/detected pose a greater possibility of spread to previously non-invaded areas. Based on the discussion in the Upland Vegetation section above, this alternative may allow sagebrush reestablishment from aerial seedings but would not reestablish perennial grasses in the burned area. In the absence of competition from desirable, perennial vegetation, the entire burn would be highly susceptible to domination by noxious weeds found in and adjacent to the site. Livestock production and wildlife habitat may be further negatively impacted in the long term if noxious weed species increase in the burn area, further reducing forage production.

#### **CUMULATIVE IMPACTS OF ALTERNATIVE 1**

Long term cumulative impacts from sagebrush seeding would provide one component of healthy range sites. However, by not seeding perennial grasses, the site would be susceptible to annual grass invasion and subsequent frequent re-burns and loss of the seeded sagebrush. Potential short and long term impacts of Alternative 1 would be similar to the No Action Alternative.

### **C. ALTERNATIVE 2 - NO ACTION**

#### **1. Upland Vegetation**

The No Action alternative would result in no short term impacts caused by drilling as in the proposed action. However, it would allow cheatgrass and possibly medusahead wildrye to occupy the bare ground, with a high risk that they may permanently dominate the burned area. Because these grasses thrive in this type of environment, the area may cross a threshold into a fire-dependent, annual-dominated community. The short fire frequency associated with these annual-dominated communities may permanently prevent the site from returning to its preburn conditions. In addition to the increased fire hazards, an annual-dominated community would provide poor wildlife habitat, would make the site more susceptible to noxious weeds, and would provide little other values associated with diverse plant communities.

#### **2. Special Status Plants**

Special status plant habitat would not be restored and may be at high risk to exotic annual grass invasions (e.g. cheatgrass and medusahead wildrye), if the pre-fire perennial plant communities do not out compete these annuals.

#### **3. Wildlife/Special Status Species**

With no reseeding of sagebrush, it may be decades before the area could again provide suitable shrub habitat for sage grouse, pronghorn antelope, pygmy rabbits, or sagebrush songbirds.

With no reseeding of the taller bunchgrasses, the proposed seeding areas would have no or very few taller grasses to provide cover for wildlife. Additionally, they would be more vulnerable to cheatgrass invasion, which would increase the likelihood of future fires, further reducing the possibility of the area eventually providing habitat for sagebrush dependent species.

#### **4. Riparian/Aquatic Resources and Water Quality**



The condition of upland watersheds affects how water is captured, stored and safely released downslope. By not improving the uplands, short and long term sedimentation rates would be elevated above pre-fire conditions. A high risk of upland rilling and gullying may lead to eventual down gradient gully migration into stream channels, causing the potential loss of riparian areas and decreasing water quality.

Allowing livestock grazing would result in greater use and degradation of riparian areas since they would not have adequate time to recover from being burned. This would result in a decline in water quality through increased sedimentation and water temperatures. Soil-water storage would be decreased due to loss of floodplains that would contribute to higher than natural water releases during precipitation or snowmelt events. Riparian area vegetation would be degraded as use on a system that had not recovered from the burn would decrease vegetation recruitment, reproduction, and survivability. In addition, riparian vegetation community types and distribution would be changed, root density lessened, and canopy cover reduced. This would lead to reduced stream channel and spring/seep dynamics and further deterioration of these systems.

## **5. Soils and Watershed**

Overall, this alternative would be negative to various degrees on the health of these lands, depending on the choices the livestock operator makes and the success of the existing vegetation to reestablish in a timely manner. Although there would be no short term soil erosion impacts due to seeding, there would still be short term erosion due to the lack of vegetative cover on the soil surface in the burn. Failure to treat sites after fire can result in irreversible dominance by annual species (such as cheatgrass). The fire-return interval for this area is higher than natural and would continually burn with undesirable annual plant invasion. This rate of return increases the potential for soil erosion, soil nutrient loss, and the effects to and loss of microbiotic crust. Without rehabilitation the dominance of weedy, annual species could surpass the prefire conditions thereby decreasing soil stability, hydrologic function, and nutrient cycling.

Under this alternative no management actions would be implemented and grazing the area would be up to the discretion of the livestock operator. Grazing the area by livestock before the area fully recovers vegetatively would adversely affect both the short-term and long-term health of these rangelands.

## **6. Cultural Resources and Paleontology**

Cultural resources exposed by fire would be visible for unauthorized collecting until vegetation recovers. Potential conversion to annual grasses would compromise the integrity of cultural sites and artifacts.

The management of fossil localities would continue as at present, unidentified localities are subject to vandalism through lack of monitoring of identified locations.

## **7. Visual Resources**

This alternative would have a negative impact on visual resource management. Scenic quality would deteriorate if there was significant erosion or increased domination of the plant community by invasive weed species.

## **8. Recreation**

This alternative would have negative impacts to recreation. Deteriorated habitat conditions would have a negative affect on nature study and wildlife-related recreation.

## **9. Livestock Management**

Not reducing livestock use in the burned area would benefit the affected livestock permittees in the short term by not having to reducing their grazing use. However, not reducing livestock use would have long

term impacts for the permittees. Livestock would concentrate their use on the succulent new regrowth on the burned perennial grasses in the burn resulting in heavy use. The impacts of the burn following by heavy use would impact these species, causing decreases in vigor, mortality, and decreased forage production.

Not drill seeding perennial grasses in the burn would allow the burn to become dominated with cheatgrass which would reduce the forage base for livestock.

#### **10 .Noxious Weeds**

Weeds left untreated/detected pose a greater threat of spread to previously non-invaded areas. In the absence of competition from desirable, perennial vegetation, the entire burn would be highly susceptible to domination by noxious weeds found in and adjacent to the site. Scotch thistle and diffuse knapweed are aggressive and highly invasive species. The root system on whitetop is damaged little by wildfire. Livestock production and wildlife habitat may be further negatively impacted in the long term if noxious weed species increase in the burn area, further reducing forage production.

#### **CUMULATIVE IMPACTS OF THE NO ACTION ALTERNATIVE**

Long term cumulative impacts are related to the ability of the watershed to recover from the burn. The rate of recovery would depend on the ability of the native plant communities to outcompete cheatgrass and medusahead. Past experience with rangeland fire in eastern Oregon and southwestern Idaho, have shown the aggressive nature of cheatgrass/medusahead would dominate these range sites following fire, if left untreated. Potential short and long term impacts of the No Action alternative include:

- loss of habitat diversity to invasive annual species and noxious weeds
- degradation of watershed stability and riparian function
- loss of forage for wildlife, livestock and wild horses
- loss of recreational opportunities associated with wildlife, wild horses, scenic and aesthetic quality
- threats to the integrity of cultural sites and artifacts

#### **VI. CONSULTATION AND COORDINATION**

Western Watersheds - Interested Public  
Hal Shepard - Interested Public  
Malheur County Court  
Oregon Department of Fish and Wildlife  
Oregon State Historical Preservation Officer  
John Scott – grazing permittee  
Baltzor Cattle Company – grazing permittee  
Duncan Manckenzie – grazing permittee  
Mahogany Creek Grazing Coop. – grazing permittee

**VII. FINDING OF NO SIGNIFICANT IMPACT:** Environmental Assessment No. OR-030-02-29 for the Malheur Field Office adequately analyzes the impacts of the proposed action and a reasonable range of alternatives and indicates there would be no significant adverse effects on the quality of the human environment. Therefore, no Environmental Impact Statement will be prepared.

s/Tom Dabbs, Acting Malheur Field Manager

September 10, 2002

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Approving Official

Date

**DECISION RECORD:** It is my decision to implement the proposed action in the Mahogany Mountain Rehabilitation Plan. I have reviewed this ESR plan and its compliance with NEPA, and have determined that the proposed action is in conformance with the 1983 Northern Malheur Management Framework Plan) and that no further environmental analysis is required. Furthermore, the proposed action is in conformance with the applicable federal regulations regarding livestock grazing.

This ESR plan includes the following treatments within the Malheur Field -Vale, Oregon: 1) Drill seeding on 800 acres; 2) Aerial seeding big sagebrush on 1200 acres; 3) Temporary protective fences; 4) Rest from livestock grazing; 5) Weed control; and 6) Fence repair.

**Decision Rationale**

The proposed project sets forth land treatment activities designed to rehabilitate the Mahogany Mountain wildfire. The proposed action would improve vegetation diversity and ecological condition. Impacts to the overall human environment are positive with few, if any, negative impacts. The project's affected region is localized and the effects of implementation are limited to the area affected by the project. There are no highly uncertain, unique or unknown risks, and the project does not set a precedent for future actions that could have significant effects. The action also does not appear to be related to any other action that could be significant and there will be no violation of any law or requirement protecting the environment. There will be no irretrievable or irreversible commitment of resources as a result of the proposed action.

The proposed action best meets the need to reduce the risk of accelerated erosion, restore the lost upland shrub component necessary for wildlife habitat, restore the health and vigor of upland grass communities, reduce the risk of future fires, prevent the spread of invasive and noxious weeds and protect the burned area from grazing impacts.

The actions are consistent with the Northern Malheur Management Framework Plan and Rangeland Program Summary and the Proposed Southeastern Oregon Resource Management Plan and Final EIS.

s/Tom Dabbs, Acting Malheur Field Manager

September 26, 2002

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Approving Official

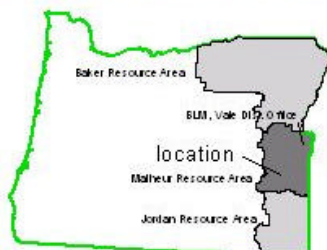
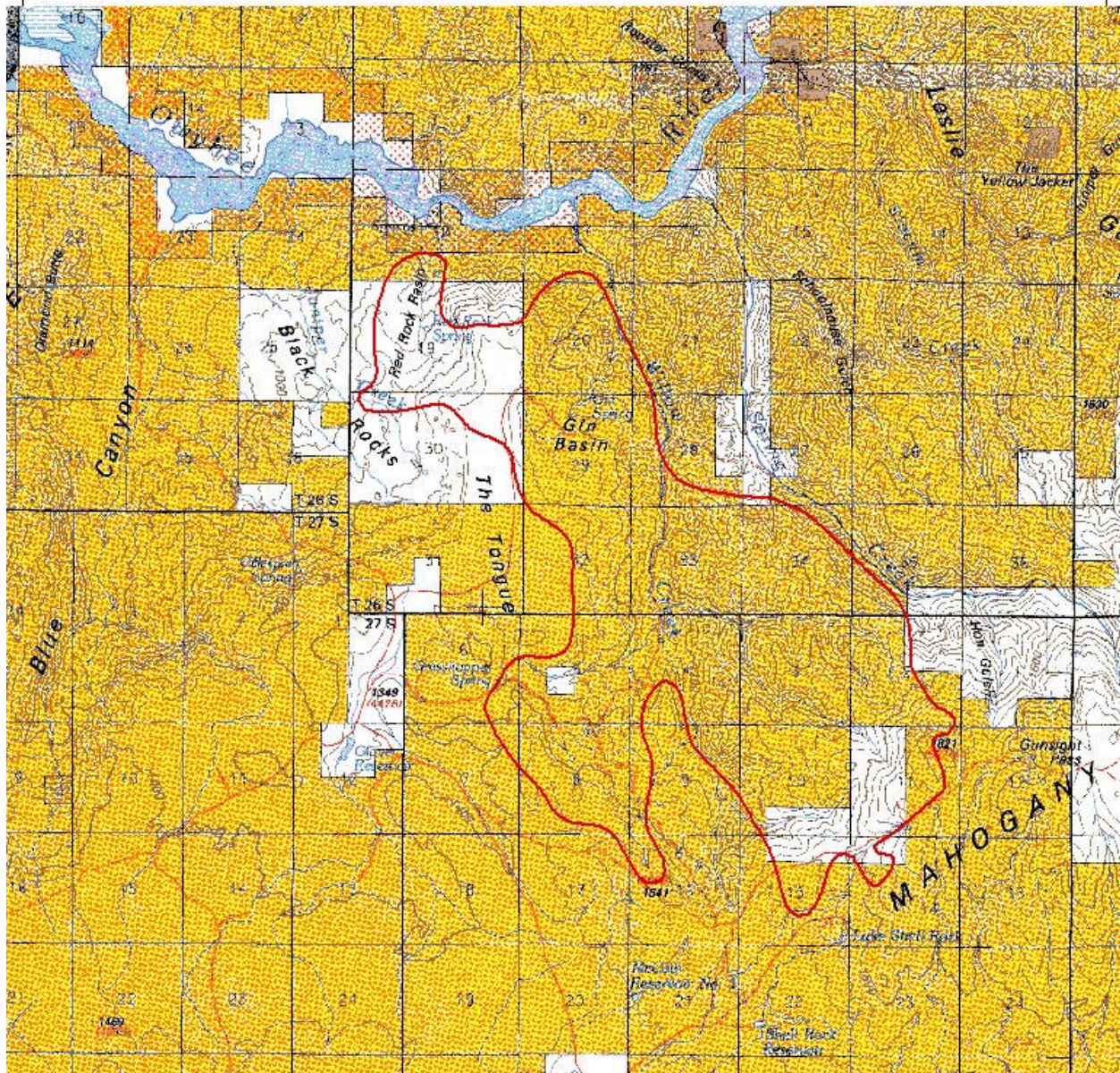
Date

# **VIII. LIST OF PREPARERS/REVIEWERS**

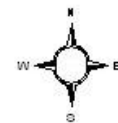
<b>Position</b>	<b>Team Member (Agency/Office)</b>
Operations	Dave Evans
NEPA Compliance & Planning	Randy Eyre
Hydrology & Soils	Shaney Rockefeller
Cultural Resources/Archeologist	Diane Pritchard
Rangeland Mgt. Specialist	Mitch Thomas
Wildlife Biologist	Al Bamann
Botanist	Jean Findley
Outdoor Recreation Planner	Bob Alward
Weeds	Lynne Silva
Field Manager	Tom Dabbs



Map 1 - General Location



Fire2002c  
Places

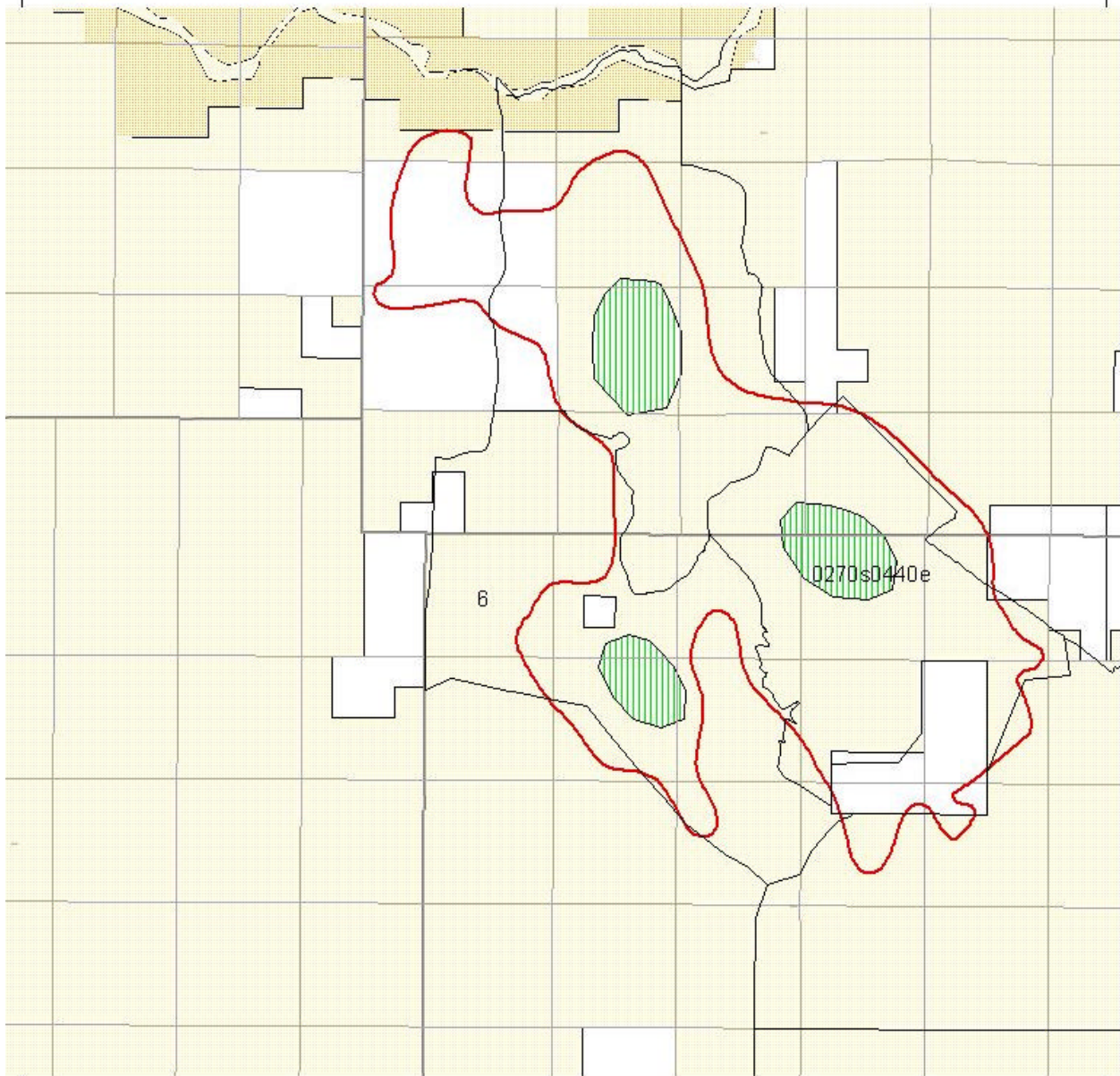


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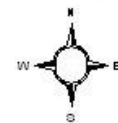


Map 2 - sagebrush seeding

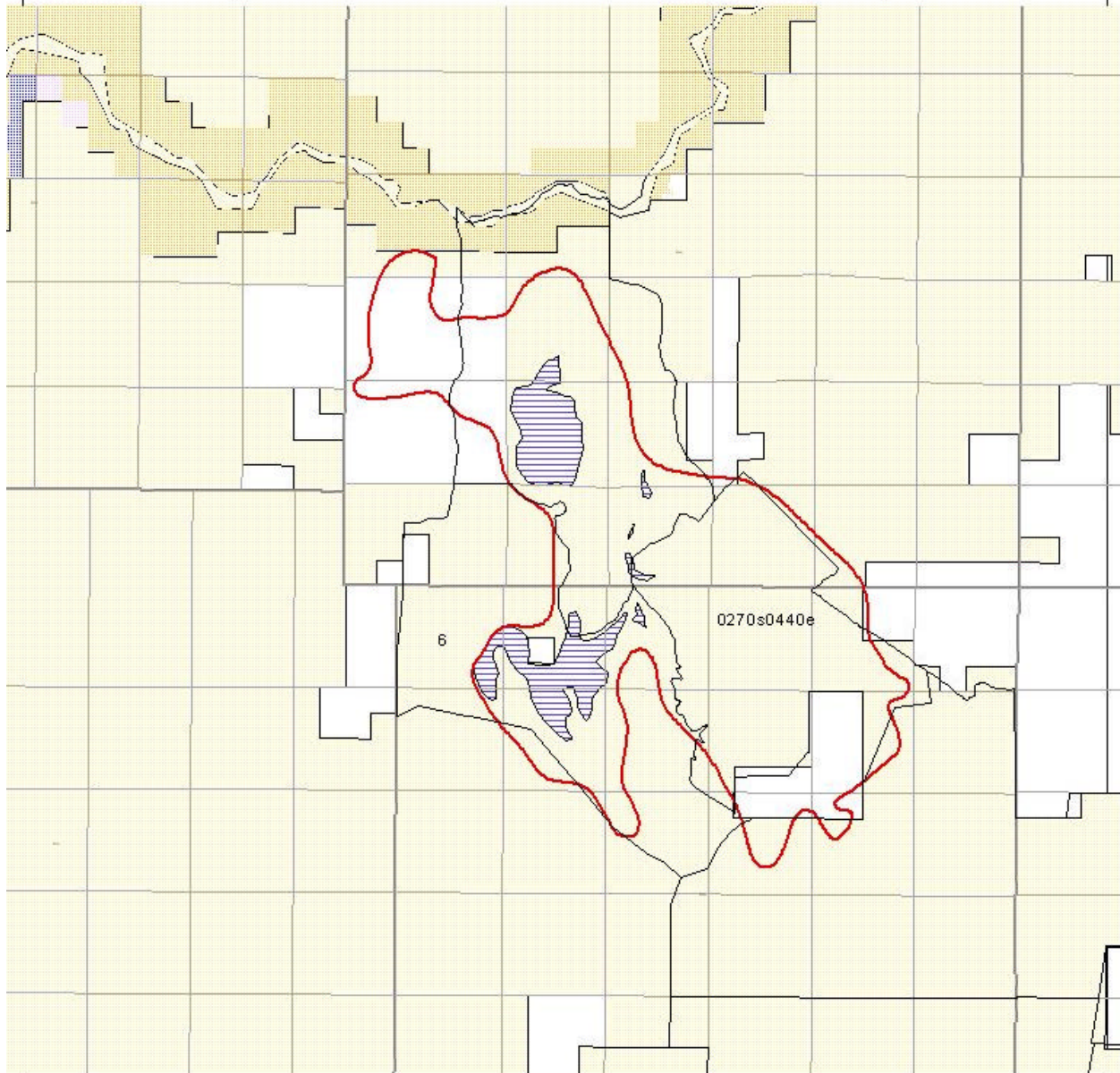


- Pastures
- Fire 2002s
- Sections (MRA/JRA)
- Township (MRA/JRA)
- Sagebrush seeding slip
- Ownership MRA/JRA
- Bureau of Land Management
- BLM Waterways
- State of Oregon
- Private
- U.S. Forest Service
- Bureau of Indian Affairs
- U.S. Fish & Wildlife
- Bureau of Reclamation
- Federal Regulatory Commission

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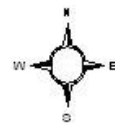


Map 3 - Drill Seeding



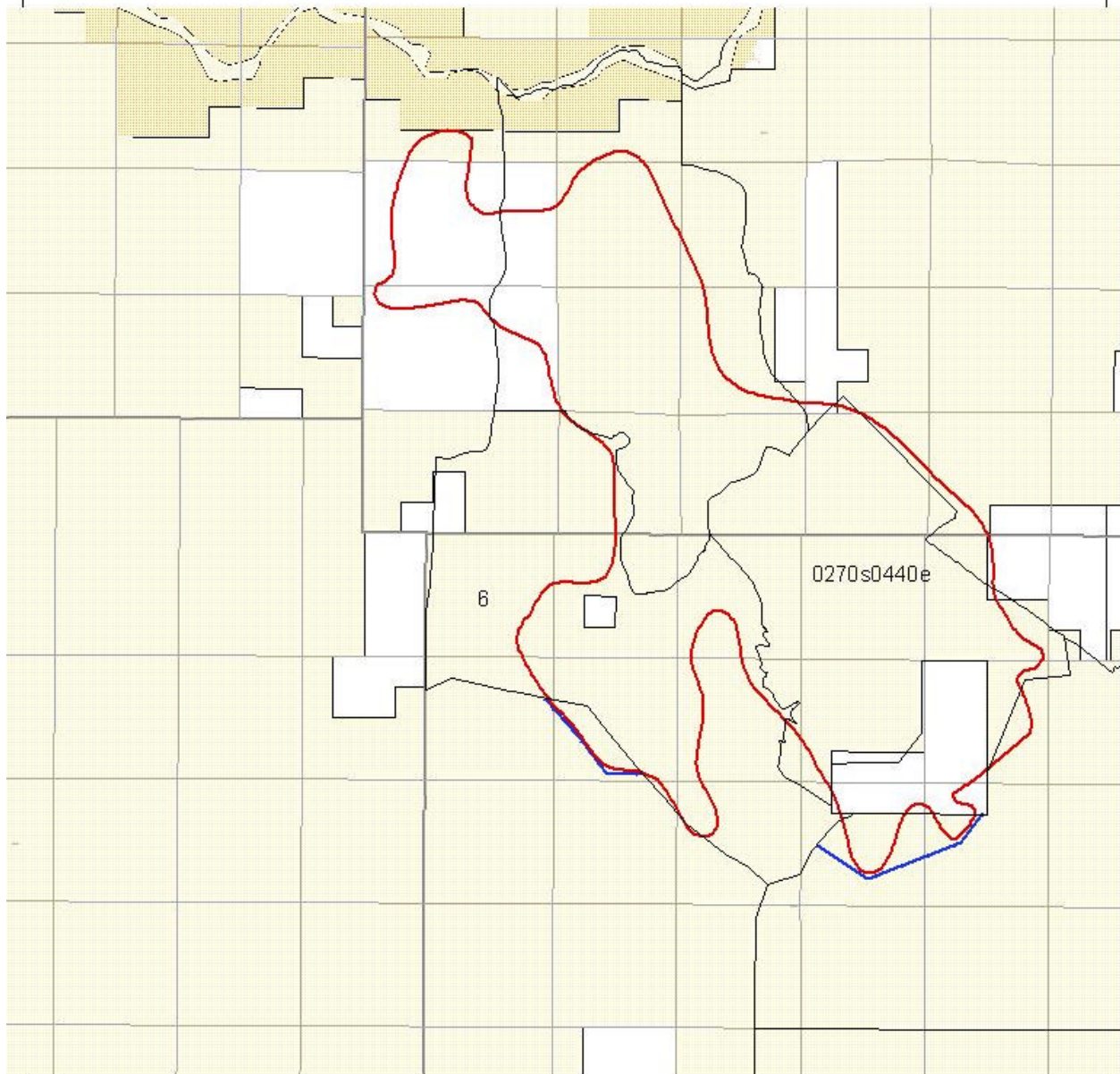
- Pasture
- Private
- BLM (BPA, JPA)
- BLM (BPA, JPA)
- BLM (BPA, JPA)
- BLM (BPA, JPA)
- BLM (BPA, JPA)
- BLM (BPA, JPA)
- BLM (BPA, JPA)
- BLM (BPA, JPA)
- Private
- U.S. Forest Service
- Bureau of Indian Affairs
- U.S. Fish & Wildlife
- Bureau of Reclamation
- Federal Regulatory Commission
- Federal Reserve
- Private

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Map 4 - Temporary fences



- Pastures
- Fire 2002s
- Temporary fences & lip
- Sections (MRA/JRA)
- Townships (MRA/JRA)
- Ownership MRA/JRA
- Bureau of Land Management
- BLM Waterways
- State of Oregon
- Private
- U.S. Forest Service
- Bureau of Indian Affairs
- U.S. Fish & Wildlife
- Bureau of Reclamation
- Federal Regulatory Commission

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